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MAY, 1936

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The Applications of Psychology to the Problems of Business and Industry

By SAMUEL N. STEVENS, *Director*
Psychology Department, The University College
Northwestern University

PSYCHOLOGY as a science is still one of the youngest of all the disciplines. Experimental methods applied to the problem of human nature were developed in the latter part of the nineteenth century. The study of individual differences did not reach any proportions until the end of that century and became significant as a means of control much later still.

It is interesting to note that psychological science in its development as a technology has been paralleled by the intensive mechanization of our industrial and business life. The control of the human variable has become of increasing significance to industry during the same period in which techniques for measuring and predicting human behavior have been in evolution. In other words, the need for control has been, to some extent, accompanied by efforts on the part of psychological scientists to establish the data and techniques for such control.

We are still in the experimental stage. Needs are greater than ever; yet the complexities of the problem have thwarted investigators in their efforts to discover methods and techniques which would prove effective in industrial situations. We are only now coming to realize that most of our difficulties in making a science out of selection, training, and supervision of workers have grown out of our tendency to oversimplify the situation and to expect too much control from too little data. As an evidence of this tendency we need only call to mind the efforts made during the war and

This and the two papers following were presented at the A.M.A. Personnel and Industrial Relations Conference held at The Palmer House, Chicago, February 5, 6, and 7, 1936.

The object of the publications of the American Management Association is to place before the members ideas which it is hoped may prove interesting and informative, but the Association does not stand sponsor for views expressed by authors in articles issued in or as its publications.

immediately afterwards to select men for industrial and business purposes on the basis of intelligence alone. Although intelligence tests do show that there is a very definite relationship between levels of ability and occupational fitness, the amount of overlapping in scores between different occupational levels makes the use of intelligence tests alone a very dangerous and ineffective procedure.

Similarly, the exclusive use of time and motion studies as a method of job analysis soon revealed to discriminating investigators that selection and training depended on much more than motor patterns and skills. In many instances Management has given up the effort to make use of psycho-technical methods because of the failure they experienced when attempting to use too simple psychological procedures as a control for a complex industrial task. No one can seriously question the validity of mental ability tests in most selection procedures and much significant datum has has been derived which, carefully used, will enable employment managers to classify applicants for occupations in a general way; but it has become necessary for investigators to recognize the fact that other factors than intelligence are equally significant in the determination of success.

To offset this oversimplification, many types of tests have been devised which fall into the classification of aptitude tests, proficiency tests, and the like. In addition, we have developed rating techniques and learned to make specific use of personal history data, including both individual, social and educational facts. It is unfortunate, however, that all of these activities have not been carried on simultaneously in any one place or at any one time. The result has been that partial use of isolated methods, regardless of their character, or of individual tests, irrespective of their merit, has still failed to effect that control in the selection and training procedure which would encourage confidence and stimulate more systematic research on the part of Management.

In 1932 I visited some ninety businesses and industries throughout the United States and was surprised to discover that a great many of these organizations had abandoned all effort at sound psycho-technical research on the basis of which objective selection procedures might be more effectively developed. These organizations were reverting back to simpler methods of interviewing, with more or less complete dependence on the subjective discrimination of interviewers and managers. This seemed to me a very regrettable condition and it is a source of satisfaction to observe at the present time a renaissance of interest in the possibilities of psycho-technical procedures in a better type of personnel control.

If during the next decade psycho-technology is to take its proper place as a tool for Management, it will be necessary for Management to recognize the necessity for sound scientific research in three directions:

1. Effective methods of selection can only grow out of sound preliminary research which involves job analysis and ability analysis.
2. The complexities of both human nature and industrial operations must be recognized and batteries of tests and measures must be developed in order that patterns of abilities and job requirements may be measured.
3. Continuous experimental and statistical follow-up which utilizes the most advanced techniques in both psychology and statistics will have to be employed if those ultimate refinements are to come to pass upon which a real science of human engineering must rest.

Many industries and businesses are large enough to support and maintain at their own expense the research organization and psycho-technical laboratories out of which such research procedures will emerge and from which long-time significant psychological and scientific results will come

Many other industries, too small to support such organizations, will find it to their advantage to encourage group research by well-trained technicians on problems which are common to them, from which they may hope to derive solutions that will not merely increase the efficiency of the worker but will decrease the actual costs of performance. Such organizations of professional men already exist and services may very well be rendered through such groups as will produce immediate as well as long-time values for the industrial and business concerns served.

New movements in the study of selection techniques are already well under way. I believe it will become increasingly clear that psycho-technology is still a vital and potentially important discipline which will be of aid and significance in the solution of many of the most trying human problems in business.

Mental Alertness Tests as Aids in Selecting Employees

By Richard Stephen Uhrbrock, *Head of Research Department*
Industrial Relations Division, The Procter & Gamble Company

ALL employers are interested in the discovery of mentally alert workers. We may think of mental alertness as general intelligence. Those who are high in mental alertness can be trained more quickly than those who are low in this essential trait. This does not imply that one must be a genius or a super-man to be considered seriously for employment. However, it does imply that very noticeable individual differences in ability exist in

any group of applicants regardless of age, education, or other physical or mental characteristics. It implies that the range of ability extends from that of the very superior to that of the extremely stupid person. Obviously the dull and stupid should not be selected for employment when persons of average or above average ability are available for the same wage.

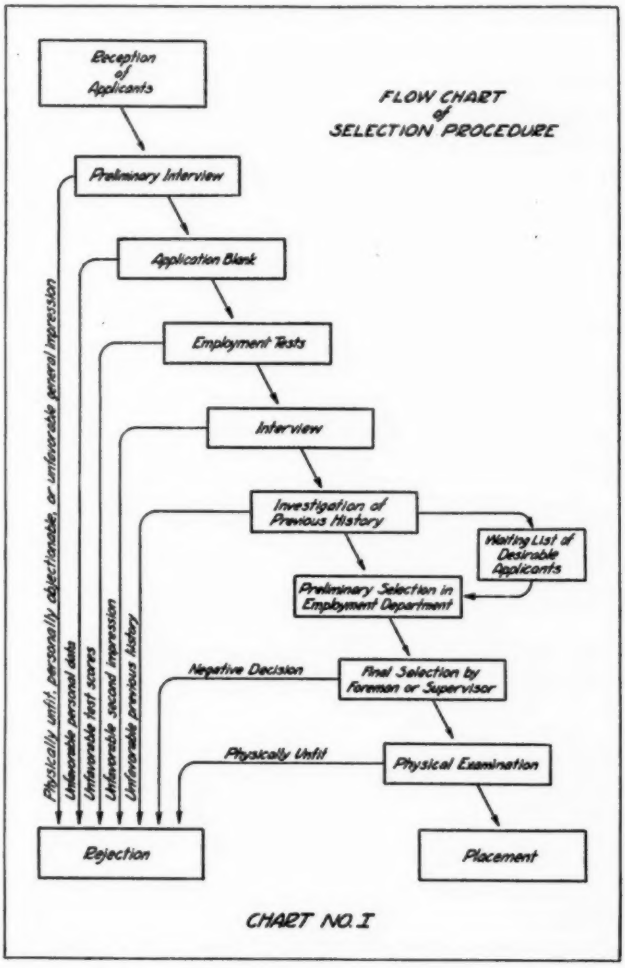
Difficulties of Careful Selection

Ordinarily when a vacancy occurs too few people are considered for placement. In the first place, many rush orders for workers are received. This places the employment manager at a disadvantage since it becomes necessary for him to rely on the waiting list, in which case he often finds that the best persons have already secured employment. Then it may become necessary for him to select hastily from those who are immediately available. Furthermore, it is common practice for employees to besiege the employment manager in order to obtain placement for relatives and friends. This constant pressure makes it almost impossible for the employment manager to perform his duties in an impartial manner unless he is given strong support by those to whom he reports. In order for him to function most effectively he should at all times be required to select the best persons available for employment regardless of ties of friendship or blood.

The Selection Procedure

It is possible to recognize at least ten distinct steps between the reception of applicants in the employment office and the final placement of the new employee in his position in a department. These steps are indicated in Chart I. After the reception of the applicant, a preliminary interview takes place. The majority of persons are rejected at this point. Those who have qualifications worth considering further may be asked to fill out application blanks. It is becoming the practice more and more in modern personnel offices to have prospective applicants complete one or more employment tests to supplement the vocational interview. Therefore, when the interviewer talks with the applicant he has as part of his background a test record as well as the details recorded on the application blank. With this background of information supplied on the application and test forms the interviewer then is in a position to explore the detailed qualifications and personal history of the applicant. For all positions it is desirable to investigate the previous history of the prospective employee. The preliminary selection by the employment office of persons having desirable qualifications is followed by the final selection by the foreman or supervisor who considers one or two persons sent to him for interview. This procedure eliminates from final consideration all but those having the most desirable qualifications. Those approved by the foreman or supervisor may be given a physical examination

either before hiring or sometime shortly after reporting for work. Final placement, therefore, only follows after the mental, physical, educational, and personal qualifications of the employee have received close scrutiny. At any point in this procedure an applicant may be rejected.



Selection Standards Based Upon Study of Present Group

The initial problem is to develop a procedure that will result in the selection of new persons who have characteristics like the best of the present group. This obviously implies some knowledge of the characteristics of the present group of employees. Research studies dealing with information contained in application blanks, hospital records, follow-up ratings, and em-

ployment tests yield information on this point. Nothing, however, can take the place of the skill and judgment that a good interviewer brings to the problem of the selection of employees. The interviewer who does not use one or more employment tests as part of his selection procedure must base his final decision almost exclusively upon estimates and personal opinions. In most cases this resolves itself into his own unchecked opinion, since ordinarily most applicants are interviewed by only one man. A carefully prepared and standardized test acts as an excellent supplement to the interview. A test, no matter how good, cannot serve as a substitute for the employment interview. A well-prepared test in the hands of even a good interviewer will improve his selection of employees. Likewise the work of the poor interviewer will become more effective as he uses tests because the constant check that the test supplies on his own judgment will stimulate him to scrutinize his selection technique and to improve his methods.

Test for Applicants for Factory Positions

Recently a set of test items was prepared to supplement the interview with rank-and-file factory applicants. This test is designed for adults whose education does not extend beyond the grammar school. It contains ten general information questions, such as:

The Saturday Evening Post magazine costs: 2¢ 5¢ 10¢ 25¢
The ampere is used in measuring: wind-power electricity water-power rainfall

Also there are ten arithmetic problems such as:

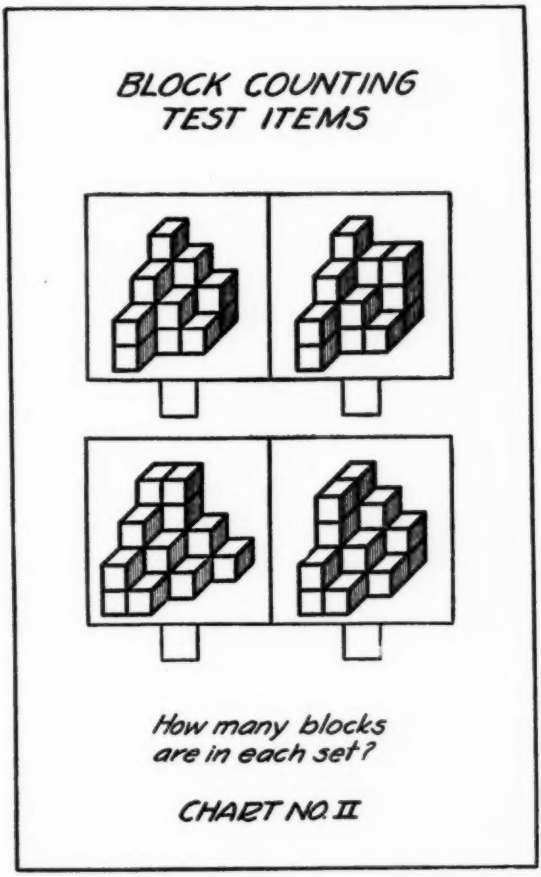
How much will 3 shirts cost at 66⅔ cents each?

If gasoline costs 19½ cents per gallon, how many gallons can you buy for $1.56?

In addition there were drawings of eighteen sets of blocks as exemplified in Chart II. A total of 38 points is possible on this relatively easy test.

The best half of rank-and-file applicants for factory positions will make scores of 20 or above out of a possible 38 points on this test. The low level of mental alertness in a group of 186 male applicants for factory employment who recently took the test is indicated by facts such as the following. Only 79 per cent of the men knew that the spark plug of a gasoline engine belongs in the cylinder. The remaining 21 per cent indicated that spark plugs are in the crank case, manifold, or carburetor. Only 40 per cent knew the answer to the question, "A square floor contains 49 square feet. How many feet long is each side?" Stupid or poorly trained individuals can be detected on the basis of a simple 15-minute test if it is used to supplement the employment interview. It must be remembered that many of these people make excellent personal appearances. Also they often talk in a fluent and engaging man-

ner that impresses the uncritical employment interviewer. However, when it comes to specific information or specific details, they often are unable to give satisfactory answers. They may not be readily trainable if placed on the job because, in many cases, their memories are poor. Often they cannot learn to follow simple instructions. In other words they are not mentally alert.



It should be pointed out that a simple test such as has been described should be used only for the type of applicant who is being considered for rank-and-file factory work and whose educational level is not beyond grammar school. For those of high-school or college training, other more difficult tests should be employed. In each group there exists a considerable range of ability. It is not unusual to find high scores equal to four times the low scores. If we assume that such applicants have had equal opportunities to

learn, it should be obvious that significant differences exist in an important characteristic.

For the past twelve years Rowntree and Company, Ltd., of York, England, has been using selection tests as part of its employment procedure. The proportion of misfits employed was only one-quarter as great after the introduction of the tests as it had been before. The steps taken in the construction of tests for apprentices are as follows: (1), a detailed analysis of the job is made to find the capacities required; and (2), a test is constructed made up of tasks as simple as possible and requiring the minimum of apparatus. Before psychological tests were introduced in 1922, approximately 20 per cent of those hired were misfits. Since 1925 only one apprentice out of 60 who were tested before employment has proved unsatisfactory.[1]

Test for Applicants for Clerical Positions

When the Otis Self-Administering Test, Higher Form A was given to 153 applicants for clerical positions, a range of scores from 20 to 73 was obtained. The mean score was 51.64. The S. D. was 11.92. Evidence has accumulated to indicate that file clerks, typists, stenographers, telephone operators, payroll clerks, cost clerks, and others in office positions who have scores above 50 on this test are more satisfactory than those whose scores are below that point.[2]

General Mental Alertness Tests for the Discovery of Promotional Material on the Factory and Lower Supervisory Levels

In one large manufacturing organization a test containing one hundred carefully selected items was built to aid in selecting able workers for training and promotion to sub-foremen positions. The test was based upon a study of the knowledge of the present group of foremen. The effectiveness of each item was analyzed in order to retain only those that were valid.[3] Items were retained which were answered correctly by a larger proportion of good foremen than of poor foremen. This is illustrated by means of data relating to the item—"F.O.B. is an abbreviation of the words: freight only billed, free on board, fill out blank, favor of buyer." In the group of foremen who were rated low only 30 per cent knew the correct answer, 52 per cent of the middle or average group gave the correct answer, and 79 per cent of the foremen who were rated as high knew the correct response. These results are shown graphically in Chart III.

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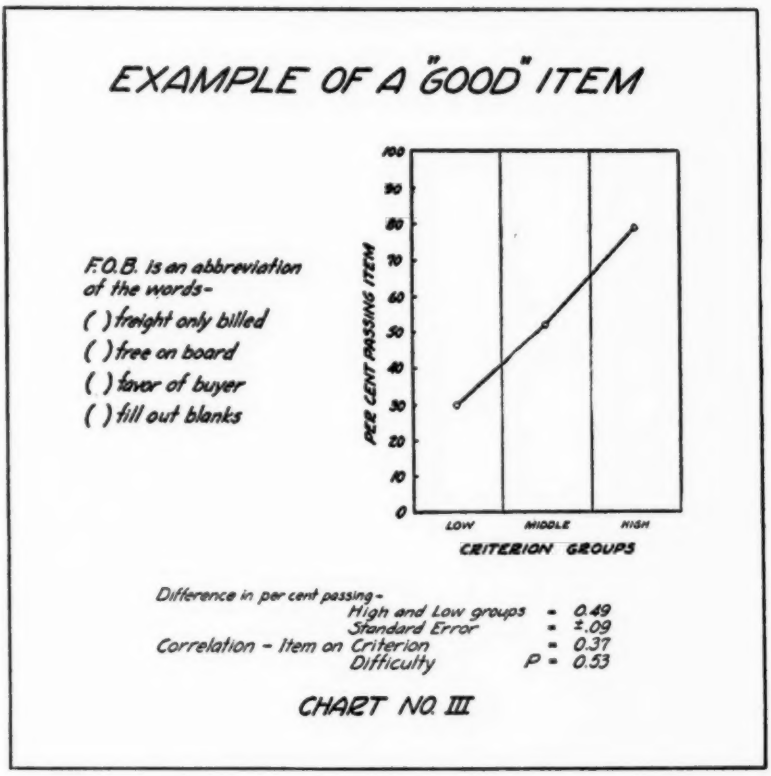
[1] Rowntree, B. Seebohm, "Towards More Scientific Employee Selection," *Executives Service Bulletin*, Vol. XIII, No. 10 (October, 1935), pp. 1-2, 8.

[2] The *Otis Self-Administering Tests of Ability* may be obtained through The Psychological Corporation, 522 Fifth Avenue, New York, N. Y.

[3] Uhrbrock, Richard S., and Richardson, M. W., "Item Analysis: The Basis for Constructing a Test for Forecasting Supervisory Ability," *Personnel Journal*, Vol. XII, No. 3 (October, 1933), pp. 141-54.

Since the test which has been described contains items whose answers are known by a larger proportion of high-grade foremen than are known by low-grade foremen, it is assumed that the worker who makes a high score in this test has at least one of the important characteristics of the high-grade foremen, and, other things being equal, probably could be developed into

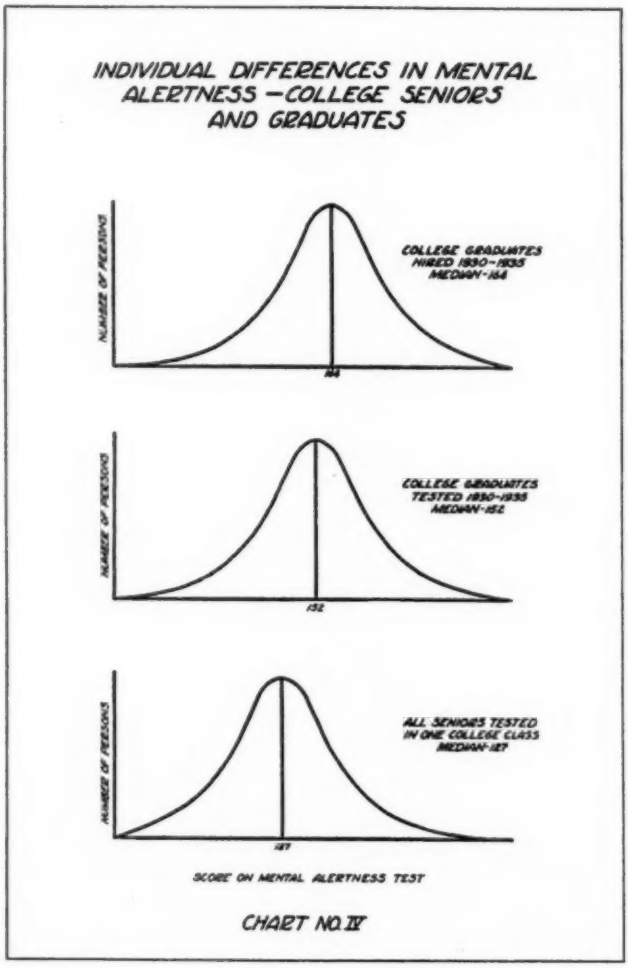


a satisfactory foreman. However, this test measures only mental alertness. Other desirable and important essentials such as aggressiveness, loyalty to the company, cooperation, honesty, and willingness to assume additional responsibility can only be estimated by means of the interview. Therefore, when such men are considered for promotion to the rank of foremen, they should be rated by foremen, supervisors, the superintendent, and others who have had opportunities to observe their work.

Tests for Applicants with College Training

The preparation of tests for college graduates represents a special problem. Mental alertness tests available for use in the selection of college

graduates are primarily measures of the ability to grasp new relationships and to master new facts that are presented formally and informally. We find that enormous individual differences exist in mental alertness in a class of college seniors. The range of ability is represented in Chart IV. In one organization a very difficult mental alertness test containing 296 items has


INDIVIDUAL DIFFERENCES IN MENTAL ALERTNESS — COLLEGE SENIORS AND GRADUATES
NUMBER OF PERSONS
COLLEGE GRADUATES HIRED 1930–1935 MEDIAN-164
164
NUMBER OF PERSONS
COLLEGE GRADUATES TESTED 1930–1935 MEDIAN-152
152
NUMBER OF PERSONS
ALL SENIORS TESTED IN ONE COLLEGE CLASS MEDIAN-127
127
SCORE ON MENTAL ALERTNESS TEST
CHART NO. IV

been used for a period of five years. College graduates have made scores ranging from 64 points to 257 points. The median score on this test for all seniors in one college was 127. The median score for all seniors and college graduates interviewed and tested by representatives of one company was 152. The median score for college graduates hired was 164. The tendency has been to select the more mentally alert men. This does not mean, how-

ever, that all low-score men are undesirable for employment since interest in the work, persistence, punctuality, good appearance and manners, sociability, and cooperation provide a desirable and rare combination of abilities that make for success. Other things being equal, the company that consistently selects its new employees from the ranks of the more mentally alert should find itself in an increasingly favorable position.

The Characteristics of a Good Test

A test, to be satisfactory in the employment office should be objective, reliable, and valid. It should be *objective* in the sense that all answers to test items are unequivocally right or wrong. The scoring of the test should not depend upon the judgment of the scorer. By using a specially prepared key, the scoring of the test by two or more persons should agree perfectly. In a good test there is no debate as to the score made by the applicant. It is objective in the sense that a thermometer reading is objective. Two persons can look at it at the same time and report essentially the same reading.

A good test is *reliable* in the sense that it would yield the same or approximately the same score upon repetition. We would have very little faith in an employment test if it indicated that a man was superior one week, and, if he should be given the same test a week later, it indicated that he was quite inferior when considered according to the same standard.

A good test should be *valid* in the sense that good workers make high scores and poor workers tend to make low scores. The validity of a test can only be shown by giving it to a group of workers of known proficiency and correlating the test scores against such criteria as ratings, or output records, or other evidences of differences in ability. It is possible to improve the validity of tests by eliminating non-valid items and substituting those to which a large proportion of good workers give correct answers and a large proportion of poor workers give the wrong replies. In a well-conducted employment office, no test is recommended for use until it has satisfied rigid requirements concerning its objectivity, reliability, and validity. If a test is to be an effective supplement to the interview it must be standardized in terms of known characteristics of employees similar to those who are to be selected for employment.

Men who are high in mental alertness are better candidates for training and development, after employment, than men whose thought processes are slower. The tests that have been described will tell how intelligent a man is, but they will not tell whether he will be motivated to use his abilities in attacking the problems his employer may assign to him. They will not tell how well he will get along with people, or how much mechanical skill he may possess. They will not indicate his interests with a high degree of accuracy. The answers to such questions must await future research opportunities.

Overcoming the Barriers to Industrial Testing

By ARTHUR W. KORNHAUSER, *Associate Professor of Business Psychology*
School of Business, University of Chicago

HERE and there an industrial concern is doing a significant job in using tests. But those instances are extremely rare. Why are tests not more extensively used and what can we do about the reasons why they are not more extensively used?

In the period just after the war there was a boom in employment testing. Enthusiastic and rosy predictions were made about what tests would accomplish over the future years. Then as the twenties rolled by it became more and more apparent to many of us who were watching the movement that the expectations were not being realized, that extremely few people in industrial concerns were making effective and significant use of tests.

The reasons for this are many. There are four important reasons to which I wish particularly to call attention:

1. For a large number of specific types of employment, testing methods have not yet proved themselves valuable. For example, there are at present no generally dependable tests for selecting executives or salesmen. As a matter of fact there are relatively few occupations where the psychologist can say, "Here is a good set of tests for selecting people for this type of work." For the most part useful tests have to be developed, through preliminary research procedures, specially to meet each industrial situation. Intelligence tests and tests of trade knowledge and skill are important exceptions—or partial exceptions, for even these tests must prove themselves in new applications.

Where tests do successfully measure occupational abilities, moreover, they may still not have proved themselves truly valuable in an economic sense. In some cases there is no extensive *need* for such tests. Where there is need there is the further question whether the tests can be *profitably* employed, whether the cost is too great to warrant their being substituted for methods which are now in use. An illustration is the fact that the Army Trade Tests were not adopted at all widely in industrial establishments after the war. The principal reason was probably that good employment interviewers who knew their jobs were able to ascertain the trade knowledge and skill of applicants in a much simpler and sufficiently serviceable fashion. There is, of course, the significant question of what happens in such a concern if the interviewer dies or leaves his job. Definite quantitative test

methods for ascertaining trade ability and trade knowledge and skill may on those occasions prove highly serviceable. But that consideration has not been sufficient to convince industry that the tests are of practical value under ordinary circumstances.

In spite, however, of the fact that there are many ranges of jobs for which we do not have any generally dependable tests, there are other fields where tests have shown their value. Even those tests have not been widely adopted. Why? The answer lies largely in the following considerations.

2. Tests are not more extensively utilized even where good tests are available, because convenient testing service under competent supervision has not been at the disposal of most business firms. Only the very large plant or office has felt justified in having its own psychologist. Small firms have had no ready place to turn to procure the type of testing service, for example, which has just been described in the paper by Doctor Uhrbrock.

3. Furthermore, many concerns which could use selective tests to advantage are entirely lacking in familiarity with available test techniques and what they have to offer. This lack of information about scientific tests is often unfortunately accompanied by considerable misinformation about pseudo-scientific systems of character reading, due perhaps to the stronger selling pressures back of those character analyses procedures.

Psychological testing has suffered not a little from the unrestrained promises of these competing groups with quick and all-powerful methods for doing what psychologists are trying to do by means of less impressive and more laborious procedures.

4. Finally, and perhaps most important, a number of business establishments have arrived at unfavorable opinions about tests, based either on direct experience or on hearsay evidence. Sometimes it is a mere snap judgment based on a cursory inspection of test content. How often, for example, have we run into mention of such items as: "The number of a Zulu's legs is: two, four, six, eight"? The executive looks at that and says, "What do I care whether my employees ever know the number of legs a Zulu has?" There have been unfortunate items of that sort put into the tests. They are being more carefully weeded out in recent years, but the important point is, of course, that no one can tell how good a test is simply by looking at a few of the items in the test.

Perhaps underlying that sort of negative criticism of tests is a deeper reason, namely, that many executives feel a little uncertain about their own abilities as measured by tests and it is partly this self-defensive mechanism which leads them to want to make fun of the kind of material which is in the test.

Then a certain amount of the unfavorable opinion also has come from the fact that some psychologists—very few, I think—and some hangers-on

to the psychological movement, have been over-enthusiastic in their selling methods and have made unsupportable claims about tests.

A further basis for these opinions is that there has been altogether too much of what we can perhaps call "home medication" by means of tests. The tests have been used as patent medicines with no adequate technical regulation of their use, and hence with unfortunate results. In some concerns tests thus received an ill name which has clung to them for years. Moreover, the failure of one type of test has frequently led to wholesale condemnation of all tests.

These, then, are some of the barriers which have stood in the way of industrial testing. To advance the utilization of sound test procedures where these are available, it is necessary to provide solutions to these difficulties. Specifically, that means that a positive program corresponding point for point with the matters just mentioned should do the following:

1. Select those occupations where tests are now most clearly useful for measuring the abilities of employees—useful in terms not only of the accomplishment of the particular test but also the need for it and the relative economy of its use. The particular tests that are useful will differ from one business concern to another but among the most generally dependable will be intelligence tests for many types of work requiring ability to think and to learn, and special tests for the principal office occupations. There are also special sensory, motor, and mechanical tests for certain occupations, for example those which have been worked out for street car motormen and automobile drivers.

While emphasis is placed here upon the utilization of tests already available, it is also, of course, desirable to go on developing new tests for occupations wherever there is need.

2. A second step in any such program is to set up adequate testing services under competent guidance for using and reporting the results of the tests chosen, both for present employees and for applicants.

3. The testing service must be made known to those in a position to use it. They need to understand what it can, and what it cannot, do.

4. Finally, unfavorable opinions about tests must be overcome by keeping the test work in competent hands and by demonstrating what it can accomplish. This means the definite discouragement of unsupervised home-remedy use of tests. It also means educating executives with respect to tests, both with respect to the possibilities and the limitations. Likewise it means pointing out to them that it would be very foolish to reject all medical treatment because there are still some incurable diseases.

The above type of program can be carried out in several different ways: Very large companies can profitably set up their own testing section within the personnel department. A significant number have done so, usually, though

not always, with well-trained psychologists in charge. It is probably better to go without the tests entirely than to go without well-trained psychologists in control.

In the second place, some companies may wisely cooperate in groups and provide testing stations to serve the several member organizations. To my knowledge this has almost never been done, although it would appear to be a highly feasible and desirable type of program where the single companies do not feel in a position to employ psychologists on their own staffs.

A third possibility is to have adequate testing service provided, though it seldom is, by public, semi-public and private employment exchanges. In a number of centers at present the federal-state employment services are making significant moves in that direction.

A final type of provision for adequate testing programs is that of independent psychological bureaus or institutes offering professional services in this field. Work of this kind has been little developed by recognized psychologists. The possibilities and limitations of useful service along this line is the principal remaining matter to which I wish to direct attention.

A program for taking certain limited steps toward setting up the type of testing service suggested is just now being embarked upon by a group of psychologists in Chicago working through the Chicago office of The Psychological Corporation. I offer this as an illustration of the sort of development that may be possible in this direction. The plan in brief is as follows:

An employee testing and classification service will be made available, confined at the beginning to office clerks, typists and stenographers. These occupations are ones where competence can be most validly measured at the present time. Here tests are *known* to be practicable and to have wide usefulness. There are extremely few occupational groups of which that statement can be made. A new set of tests has been constructed for the three types of work, tests which obtain measurable samples of the candidates' performance on typical tasks of the occupation. Intelligence testing of other groups will also be provided wherever the object is to judge alertness or fitness for training courses or ability to meet other intellectual requirements.

The tests will be used in two ways: in providing a testing service for business concerns and in giving a rating of competence to individual job seekers. The service for business firms will be set up both for measuring the competence of present employees and for rating applicants for positions. The testing will be available for concerns with only a few employees, as well as for large companies.

High-class employment agencies will also be encouraged to use the test service. It will in no sense compete with these agencies. It will limit itself strictly to certifying the competence of individuals in the specified tasks like

typing and in intellectual ability. It will not try to make a general appraisal of the person's fitness for employment.

Individual job seekers will be able to take the tests in order to secure certificates of proficiency. For this purpose tests will be administered from time to time for groups of persons who wish to register individually. The person whose proficiency is certified by a competent, impartial, psychological organization will, it is hoped, find this certification of advantage in securing employment to the extent that the certification system becomes known to employers.

Finally, as a later development it is planned to extend the testing to other occupations and to issue periodic parallel forms of the tests. This latter step will help eliminate the danger of coaching for the examinations.

The type of program suggested is conceived as a useful supplement to what is done by private companies and by public agencies. It is not an alternative. It is our feeling that there are a great many employers who want to do something more in the testing field but who feel it is impossible to employ their own psychologists and who have enough discretion to recognize the dangers in going ahead with what we have called home-remedy test-medication. The dominant objective of any such plan as this should be to advance the sound and technically competent utilization of employment tests. The proposed enterprise will be carried forward flexibly and with ready willingness to modify procedures if and as better methods are discovered.

Suggestions and criticisms concerning the usefulness of this sort of employee classification service will be gladly received.

Psychology and the Accident-Prone Employee

By Robert N. McMurry, *Executive Secretary*
The Psychological Corporation

FOR more than a decade, psychologists have been working on the problem of the causation, and methods for the elimination of, accidents in industry. Accidents have been of particular interest to psychologists because it was early discovered that there are large individual differences in susceptibility to them. Occasionally it has been found that as few as 10 per cent of the workers have as high as 30 per cent of the accidents. Persons whose records prove them to be highly susceptible, have come to be characterized as "accident-prone." One of the tasks which the psychologists set themselves, therefore, was the development of tests which would detect and make possible the elimination of the accident-prone worker. As a result, a variety of tests, ranging from those using only paper and pencil, e.g., in-

telligence scales, to those making use of elaborate mechanical equipment, have been devised. The majority of these are aimed either to reproduce certain aspects of the work or to measure traits which were thought to be related to proneness to accident.

Despite the not inconsiderable amounts of time and money which were spent in the development of these measures, they do not appear to have provided a completely satisfying solution of the problem of the detection of the individual with a predisposition to mishaps. Tests have been devised which will measure functions that bear a relation to accident proneness—but, unfortunately, these functions account for only a relatively small part of the accidents. As a result, the test procedures as now constituted cannot be said to have a very high predictive value. In consequence, from the standpoint of practical utility, they appear definitely to be in need of being supplemented.

A rather typical example of an attempt to develop measures of accident proneness was that undertaken by Farmer, Chambers, and Kirk for the British Industrial Health Research Board.[1] Taking a group of shipyard apprentices, including shipwrights, electric fitters, engine fitters, and naval artificers, they administered a considerable variety and number of tests. Of these, the only ones which bore any relation to accident liability were three: Reaction time, dotting, and pursuit meter. Taken together, these form the so-called aesthetokinetic tests. Summarizing their findings, the authors make two points which are of interest in the evaluation of test programs of which theirs is typical: 1. "The degree of association between aesthetokinetic coordination and accident proneness is sufficiently small [0.105] to make it clear that deficiency in this function accounts for only a part of the accidents sustained, but there is some advantage in having isolated one of the factors involved and measured its importance. Ultimately it may be possible to isolate other factors so that our knowledge as to the nature of accident proneness may not finally be so scanty as at present.

2. "The relation between the psychological functions involved in the tests and accident proneness appears to be not a finely graded one, but a gross one, so that only extremes of goodness and badness in the test scores are positively related to differences in accident rates."

A number of factors inherent in testing programs, generally, probably contribute to the lack of relationship between test scores and accident rates:

First, the relevancy of the tests to the uses to which they have been put may, in some instances, be questioned. Frequently their choice is based only upon a hypothesis. Even of greater significance is the question whether the test measures the trait for which it was designed. According to Long and Pear, also working for the British Industrial Health Board, "It is a mistake

[1] E. Farmer, E. G. Chambers, and F. J. Kirk, "Tests for Accident Proneness," *Bulletin British Industrial Health Research Board, No. 68,* London, 1933, p. 30.

to assume that single tests actually test solely and conclusively isolated capacities." [1]

Second, the possibility of breaking relatively complex behavior patterns, e.g., driving a motor vehicle, into their constituent parts and obtaining a valid measure of performance by testing one or more of the unit parts is regarded as doubtful. As is likewise maintained by the German *Gestalt* psychologists, a fairly complicated response pattern may be more or even less than the sum of its constituent parts. In the process of interaction, the elements undergo change. Reaction time, as measured in the laboratory, may be an entirely different entity from reaction time as a part of an involved series of reflexes. On this point, Long and Pear say "It is not permissible to deduce the total capacity required for an occupation from the presence of a series of isolated capacities, such as sureness of eye, sensitiveness of touch, etc., by fitting the single elements together like a piece of mosaic." [2]

Third, little control is possible over the attitudes and motives of the individual taking the tests. The laboratory is an artificial environment under any conditions. No method has been developed to insure that the person taking the test has the same attitude, the identical mental "set," toward the task as he would under actual working conditions. Genuine fear, for example, is very difficult to create in the laboratory. Moreover, if the job is particularly important to him, the employee may be motivated to respond in a manner which he thinks will place him in the most favorable light, regardless of how representative it may be of his usual mode of reaction. Thus a man may be by nature extremely careless; but if he wants the job, he may be unusually careful—on the tests. As a result, a man's score may be far from a fair measure of his usual performance.

Because of these limitations on the part of tests, it seems advisable to seek some means to supplement their findings. One possibility is the study of the personalities of accident-prone persons. This represents a wide departure from the traditional approach to the problem, but, on the other hand, promises to make accessible to investigation aspects of human behavior which were not susceptible to study by means of test techniques. To begin with, it deals with the individual as a whole. All of the emphasis is placed upon behavior trends as they express themselves in his total life pattern. An effort is made to determine the dominating drives which underlie his behavior. Often it will be discovered that one basic impulse is finding expression in several ways simultaneously. *The purpose of such a study with accident-prone persons is to attempt to determine whether their chief behavior trends are of such a nature that they tend to cause them to take undue risks*

[1] Long and Pear, *Bulletin British Industrial Health Research Board, No. 64*, London, 1932, p. 57.

[2] Ibid, p. 58.

or even go so far as to indulge in activity which is definitely dangerous to themselves or others.

Several illustrations will serve to make the point clearer. There is, for example, the person with a marked hostility to authority. This may be an outgrowth of early conflicts with his parents, teachers, or other representatives of authority. Its source is relatively immaterial; it is its constant striving for expression which is significant. The manifestations of this antagonism may be extremely varied. It may find outlet in insubordination; dislike for the company may find expression in carelessness with respect to its equipment; hostility toward authority as embodied in the law may find vent in constant violation of traffic regulations. Such persons drive nonchalantly through stop signals, shouting "Ha, ha, I've broken another law." Yet the same individuals if subjected to the usual tests, might make an excellent score. In the matter of speed of reaction, ability to judge the rate of motion of objects, or muscular coordination, which are usually considered as fundamental to successful driving, they would be indistinguishable from persons with flawless records. *The root of their difficulty lies not in any motor or intellectual deficiency (which could be measured by tests), but in an emotional maladjustment. Their physical and mental equipment is often of the best; it is simply that they are not motivated to make proper use of it.*

Another potential menace is the exhibitionist. He is the person, who while an adult physically and chronologically, is emotionally still a child. He has an insatiable craving for attention. As a child he got it by standing on his head before his mother's guests; now he gets it by being reckless. In the factory it is he who ostentatiously omits the use of the safety devices, implying that he is both skilled and courageous. When he drives he cuts corners, misses other vehicles by fractions of inches, and drives at high speeds on crowded highways. Such persons are often actually very skillful and succeed in going for long periods without reaping the consequences of their folly.

An entirely different, but equally dangerous person, is the day-dreamer. He may be, and often is, extremely conscientious—but his mind wanders. Perhaps he is operating a punch press. Entirely lost in contemplation of his date of the night before, he abstractedly inserts his finger instead of the metal into the press. If he is a driver, he may have his attention caught by some shapely miss on the sidewalk and forget entirely that he is guiding a rapidly moving vehicle.

Closely related to the types described above, but even more significant from an accident standpoint, is the person with well-developed self-destructive impulses. Not all urges toward self-destruction culminate in suicide. These drives find many partial expressions. Furthermore, they are rarely recognized as such. Contrary to popular belief, many persons suffer from

a compulsive (rarely conscious, as such) need to punish, humiliate, or even injure themselves. Many a *faux pas* or instance of clumsy oafishness is not simply a matter of the individual's inability to coordinate; it is the expression of a strong innate need on his part for self-humiliation or injury. Many apparently inadvertent slips of the hand, often leading to serious injury, may be traced to this source.

Recognition of these underlying trends is rarely a matter for the layman. Nor, as has already been indicated, are they susceptible to detection by means of tests. The dream of a test battery which would precisely and almost automatically eliminate the accident-prone individual must be given up. Instead, these trends can be brought to light only on the basis of a rather involved and extensive series of examinations and interviews. Accurately to form an estimate of their character and strength requires insight into the physical and intellectual equipment of the individual as well as into the nature of his adjustment to his environment.

To obtain this background about the individual, physical, psychological, and sociological data must be obtained about him. He should be given a physical examination to rule out any purely mechanical factors which might predispose him to accident (defective eyesight, color-blindness, muscular lack of balance, etc.). His intelligence should be tested to determine whether or not he suffers from mental defect or deficiency. His adjustment to his work and his home should be studied because it is here that the majority of his behavior trends will tend to manifest themselves. These data should be supplemented by an interview which will provide an opportunity to evaluate them in terms of what the individual himself contributes. On the basis of this information, it will then be possible to gain some insight into the causes of high accident-rates.

If, on a given type of work, a number of employees with bad accident records and an equal number with good records were subjected to this detailed study, it is very possible that some interesting and significant differences between the groups would appear. On the basis of the findings of an investigation of this character, standards could be established to guide in the selection of new men and to help in the disposition of men already on the job. The procedure which has been suggested here is still in the theoretical stage. It is possible that when tried out on a large scale in industry, it will contribute no more than have the various programs which made use of tests. It suffers likewise from the disadvantage of being involved and costly. On the other hand, accidents are also expensive. Because it is manifest that tests, at any event thus far, have provided no more than a partial solution to the problem, it might be worth the effort to give the study of personality at least a trial.

The Place of Statistical Analysis in Modern Personnel Administration

By DALE YODER, *Professor of Personnel Administration*
School of Business Administration, University of Minnesota

PERSONNEL administration has numerous aspects and facets and appears to different students and practitioners as many different, though related, types of practice. It would appear fair to say, however, that, to most present-day students, the essence of personnel administration as defined by its major responsibilities and objectives includes (1) the development of a body of principles to be applied in the management and control of labor power as contrasted with other phases of industrial engineering or management, and (2) the constant evaluation and revaluation of every aspect of managerial policy to determine its effect upon the long-time productive efficiency of man-power. The second of these objectives is clearly a corollary of the first, for only by such constant evaluation can an effective body of principles be established.

The second objective, the continuous weighing of all managerial policies and techniques to discover their effects upon the attitudes and actions of employees, has both individual and group aspects. From the point of view of the first of these, it involves the determination of individual attitudes and reactions, a result to be attained for the most part by interviews and other personal contacts with the members of the working force. It may require, in the case of particular employees, much more extensive investigation, including the development of a highly exhaustive personal history and analysis coupled with psychological and psychiatric examination.

Major emphasis in personnel research has, in recent years, tended to center about this type of personal, individual case study, and valuable contributions have been made to the principles of personnel management as a result of the continuing study of personal attitudes, emotional responses, and ideological patterns. A broad and growing field of personnel literature has sprung from these efforts to recognize and describe the personal characteristics of individual employees that explain their reactions to managerial policies and practices.

There are, on the other hand, numerous aspects of personnel procedure that cannot be conveniently evaluated in individualistic terms, aspects that can only be interpreted through some type of group analysis, i.e., investigation of their aggregative effects. Their accurate evaluation requires use of techniques that get at common reactions, that supplement knowledge of

individual attitudes and opinions with quantitative evidence of the implications of such reactions and the reasons therefore as they appear within the whole group of employees. Numerous situations can best be described in terms of the "general rule," the "prevailing tendency," or some other characteristic representative of their aggregative features. There are, in other words, many aspects of modern personnel procedure that require for their understanding, either in addition to or in place of individual case study, analysis in terms of group tendencies and characteristics. There are numerous features of personnel administration in which thorough-going analysis is entirely dependent upon or vastly assisted by various types of statistical investigation. Moreover, it appears likely that the more general application of statistical techniques to such phases of personnel administration may encourage an appreciable and valuable growth in the body of principles that make up the essential elements in the youthful but advancing applied science of personnel administration.

It is possible that mention and brief description of a few of the most obvious opportunities for applying statistical method to personnel problems may assist in clarifying the contention raised in preceding paragraphs. To that end, attention may well be directed to a few of the most promising phases of personnel procedure that appear to be amenable to statistical analysis.

It will be clear that modern personnel practice has already adopted and makes extensive use of some statistical devices in its dependence upon measures of central tendency and dispersion. References to average hours per week, median wages and turnover rates, percentile and quartile ranking in test scores of various types are common features of the literature of the field and require neither justification nor explanation. These simpler statistical techniques such as averaging and discovering other measures of central tendency and dispersion are already generally accepted and widely utilized.

Similarly, modern personnel management has already learned the value of charts, diagrams and more complicated forms of graphic representation in assisting in the analysis of data by permitting it to be visualized and in interpreting to employees as well as to management the meaning and significance of personnel problems portrayed in such figures. There is, however, ample opportunity for a profitable expansion in the use of such devices, and the field will attain additional recognition as it makes its contributions more meaningful to those beyond its pale by the more general use of graphic representation.

Lesser usage has been accorded another statistical device, the relative or index number, but its possible value requires little demonstration. Many series of data are made more readily interpretable and usable when reduced to the form of simple relatives. At the same time, an understanding of the

nature and construction of indexes of living costs is essential to the proper usage of such cost of living indexes as are available and to the creation and maintenance of local indexes for more restricted purposes, especially wage adjustment. The use of such devices to deflate current wage payments, thereby maintaining a running check on the purchasing power of the latter, represents one of the most likely means of forecasting and forestalling employee dissatisfaction arising out of shifts in real earnings.

Personnel administration has made little use of time series analysis, although such study is necessarily fundamental in any realistic approach to that most difficult of personnel problems, employment stabilization. Any well-organized program directed toward this objective should be founded upon a thorough understanding of the types and causes of instability and a measurement of the significance of each such source. Such an appreciation requires recognition of the long-time trend of employment in the industry and in the concern, as well as equally effective quantitative evaluation of the influence of the cycle, of seasonal fluctuations, and of significant residual causes remaining when these major sources have been recognized and measured. In addition, there are numerous other types of personnel data that take on new meaning when they are subjected to the critical manipulation involved in time series analysis, including current tendencies in working hours, weekly earnings, piece rate and bonus payments, and many others of lesser prominence and importance.

Considerably greater attention has been directed toward the use of correlation in measuring significant relationships and co-variation in the field of personnel data, but much more extensive utilization of this convenient tool is entirely possible and offers distinct promise. One such expansion involves the more general application of multiple and partial correlation techniques and the adaptation to the data of personnel of modern semi-automatic manipulative devices for this purpose. Another is the more general realization of the significance of regressions in prediction and estimation, coupled of course, with a full recognition of the limitations of simple linear correlation and regression and of the significance of errors of estimate accompanying these measures. Thus, relationships between wages, hours of employment, accidents, production, absenteeism, tardiness, entrance test scores, intelligence quotients, high school and college grades, and a host of other factors and conditions may be profitably evaluated, and their more widespread analysis may be expected to increase tremendously the mass of principles and generalizations that makes up the heart of the science. At the same time, predictions and estimates based upon the measurement of such inter-relationships will demonstrate their worth in selection, training, discipline, determination of wage policies, and many other aspects of applied personnel procedure.

Finally, numerous applications of sampling techniques and measures of

reliability and significance have great potential promise in personnel analysis. Use of sampling devices may frequently reduce the work involved in determining characteristics of employees, such as their provisions of life insurance, their contributions to charities, or their dependence upon local loan facilities. Not only are such aids a means of reducing the detailed work of the personnel division, but their effect in limiting necessary inquiry and investigation, in such cases, has an added advantage in that it holds to a minimum the unfavorable employee reactions to such probing.

Similarly, measures of reliability and significance provide a critical and realistic basis for evaluation of changes in policy and readjustments and rearrangements of various sorts. Thus an apparent improvement in unit costs following introduction of a new wage plan or a changed arrangement of working hours or shifts may be shown to be little more than a probable chance variation, or, on the other hand, it may be conclusively demonstrated to have more than accidental significance. Possible applications of such devices to the usual problems of personnel administration will suggest themselves in large numbers to the executive who has faced such problems. Certainly, no statement as brief as this can do more than to indicate the general nature of situations to which these devices are applicable.

In general, therefore, it appears that the more intensive and extensive application of modern statistical techniques to the data of personnel offers promise of significant contributions to the body of principles already developed in the field. Such application presupposes, of course, a thorough understanding of the implications and limitations of the devices so used, and the fact that they have not found more general usage up to the present time is in part a reflection of the lack of familiarity with statistical measurement that has characterized a considerable portion of the men and women who have been charged with the responsibility for the development of the field.

The use of statistical analysis in attacking personnel problems is not, however, merely an incidental method of approach; it is the only method that can be effectively utilized in dealing with workers as groups of persons rather than individuals and in measuring conditions in terms representative of such groups. Students of personnel management may, therefore, confidently expect a worthwhile expansion of the field as the applicability of such techniques gains increasing recognition.

Management and the Hospital Service Plan

By MAXWELL HAHN
Associated Hospital Service of New York

WHAT should be management's policy toward the three-cents-a-day plan for hospital care? When employees approach the personnel director with the request that the hospital plan be made available to them, shall management discourage the idea or cooperate?

In New York, Newark, Rochester, Cleveland, St. Paul-Minneapolis, Washington, New Orleans, Houston, Sacramento and several other cities, the executives of hundreds of important corporations are cooperating with the city-wide hospital service plan of their community. In Boston, Pittsburgh, Chicago and other cities, similar non-profit plans are being developed.

The purpose of the three-cents-a-day plan is to enable the person with a regular income to have hospital care when he needs it, without the usual burden of expense. A comparatively small monthly, quarterly or yearly payment when he is in good health entitles the subscriber to adequate hospital care without further expense for 21 days, in a hospital where his doctor is privileged to practice. He may be hospitalized for any type of illness or injury regularly treated in a general hospital.

The subscriber to the New York plan is entitled to hospital care for 21 days each year in a semi-private room. This 21 days' care is available to him, whether he uses it in one or more hospital admissions. If the patient should stay more than 21 days (the average hospital stay in general hospitals throughout the United States is two weeks) he is entitled to a 25 per cent discount off semi-private hospital charges for service needed after the first 21 days for the remainder of his contract year.

The privileges also include necessary X-rays and laboratory examinations for bed patients requiring hospital care, as well as free use of the operating room.

Hospital maternity care—that is, free use of the delivery room, board and room, medications, dressings, laboratory examinations, etc., but not the obstetrician's services—is provided to those who have been members for at least 10 months. A mother may thus have her baby, so far as her hospital expense is concerned, for only $8.50 (roughly 10/12ths of her yearly membership fee). The hospital, however, may charge regular nursery rates for care of the new-born baby.

Other benefits include general anesthesia, when such service is supplied by a salaried attendant of the hospital, general nursing care, routine medications and dressings, and a credit on the daily board and room cost of a single room, if one is desired.

The service rendered subscribers by a physician, surgeon or special private nurse is not included. Neither do the benefits include hospital service for pulmonary tuberculosis, venereal disease, hospital care provided for under the Workmen's Compensation Law, quarantinable diseases or mental disorders.

Theoretically the hospital plan does nothing for employees that they cannot do for themselves. They could budget to pay possible hospital bills just as they could budget against the possibility that their home might burn and that their household possessions might be destroyed. The unpredictability of illness or injury requiring hospital care makes it practically impossible for the person of moderate income to budget against the possibility of hospitalized illness. He does not know when he may go to the hospital, how long he may stay, nor what the maximum expense may be. Almost every employee faces potential hospital bills in excess of his ability to pay.

The function of the hospital service plan having been defined, let us look at its origin. The question of finding a method whereby the average patient could pay his hospital bill dates back to the time when voluntary hospitals—the type we think of as private hospitals—began to charge patients for services rendered. The question was not without interest to the doctor, for if the patient used all his cash resources to reimburse the hospital, doctors' bills could not be paid promptly, if at all. The situation was intensified when declining business lowered wages and salaries without cutting hospital costs proportionately. Not only must hospitals employ large staffs (there is an average of one and one-half employees for every patient in good general hospitals) but institutional economies are more than offset by discoveries in medical science which require new and costly equipment or expensive medications.

Hospital administrators tried to solve the problem by adjusting charges to ability to pay, and found themselves with thousands of below-cost or part-charity patients who were self-respecting and who neither expected nor received charity from any other agency.

There were earlier instances of group prepayment for hospital care than the London Hospital Saving Association, which began to enroll contributors in July, 1923, but the London association marks the beginning of the present era of popularity of hospital service plans in Great Britain. Six years later, in December, 1929, Baylor University Hospital, Dallas, Texas, started the parade in the United States.

There has been no effort to establish the English system in the United

States because the English hospital system is very different from ours, and the English contributors receive charity when they are hospitalized since their payments of three pence weekly are inadequate to pay the full cost of service provided. In addition, the London plan is restricted to single men or women with incomes of less than four pounds sterling per week and to families with less than six pounds per week. No American plan, to my knowledge, has any income restriction, although neither the poor, who should have charity service, nor the rich are encouraged to enroll.

In these three-cents-a-day plans, the principle of group insurance has been adapted to community hospital service. Instead of an indemnifying contract, whereby cash is paid direct to the subscriber, these plans offer service contracts whereby payments are made direct by the service corporation to the hospital providing care for the subscriber.

The three-cents-a-day plan enrolls subscribers only from organized groups, because there is no physical examination of applicants. To save the applicants this expense and inconvenience, the plan requires enrollment through a group which is a normal cross-section of the community. Applicants must sign a health statement to the effect that they understand that the benefits of the plan do not apply in cases where the need for hospital care is known at the time the application is made.

Experience with hospital service plans in large cities shows that when subscribers are enrolled outside of organized groups, adverse selection of risks follows. Hospital bills cannot be sold indiscriminately for $10 a year. Considering that those persons who know that they have conditions requiring early hospital care are the ones most anxious to enroll, it is obvious that if one did not adhere to enrollment through organized groups, concentration of bad risks would result. This would lead to serious difficulties for the hospital service plan.

Insistence upon enrollment through organized groups does not mean that all of the employees must join before any of them can have the benefits. On the contrary, experience in New York shows that where the employer cooperates so that all employees know that the three-cents-a-day plan is being offered to them at that time, a representative group will enroll.

New York's three-cents-a-day plan accepts applications from all who meet the group requirement, sign the health statement, who are not more than 65 years of age, and who live or work within the area served by the member hospitals. Once a person's application is accepted at the age of 65 or less, he may continue as a subscriber indefinitely. There are no occupational restrictions. Wives and other dependents may enroll with the subscriber by paying a separate fee.

How can a business man know that his employees are being offered a sound plan? Before the hospital service project should be accepted as a

sound plan it should meet at least five of these six tests: Non-profit sponsorship, actuarial soundness, financial soundness, conservative management, free choice of physician and hospital, state insurance department supervision.

The first standard is sponsorship. Who is behind the plan? What are their motives? If the board of directors includes several hospital trustees, that representation is an indication that this probably is a worthy community project.

Is this a non-profit project? This question should be answered in the affirmative so that any surplus will return to subscribers in the form of reduced rates or increased benefits.

If all, or nearly all, of the hospitals in the area are participating members, that in itself is excellent assurance. Another assurance would be the reliability of the hospitals in the plan.

The second test is the actuarial soundness of the project. Actuarial figures for a hospital service plan are obtained by analysis of the average cost of hospital service for the area and the average proportion of the population which annually received care in hospitals for the nearly 4,000 types of illness and injury covered in the service contract.

If this actuarial test seems technical and involved, one might content himself with ascertaining whether any insurance specialists participated in establishment of the plan, or whether any insurance executives are on the board.

The third test is financial soundness. Is the organization not only meeting its financial obligations promptly, but is it handling payments by subscribers as trust funds earmarked to pay their hospital bills? The financial statement should show an ample cash reserve to finance the hospitalization of an unexpectedly large number of subscribers due to some emergency.

The fourth criterion of a sound plan is conservative management. This is interwoven with the preceding tests. These plans need experienced management, just as much as any other enterprise. Beneath the extraordinarily simple idea of budgeting three cents a day for hospital care are complicated problems of relations with the public, the hospitals and the medical profession.

Expense control is a particularly trying problem. Tremendous detail is involved in keeping individual records for subscribers, sending notices of payments due and collection of subscription charges. In New York, in spite of the fact that there are individual records for 75,000 subscribers, operating costs not only compare favorably with other plans throughout the country, but expenses are still being trimmed from one to two per cent, month by month.

In New York we have the good fortune to have Frank Van Dyk, probably the best informed man on hospital service plans in the country, as execu-

tive director. Mr. Van Dyk not only has a background of familiarity with hospital financial problems for eight years, but he was the operating head of the Associated Hospitals of Essex County, the hospital service plan in Newark, N. J., which was the first community-wide plan in the country.

The fifth test is free choice of hospital and physician. Subscribers should be able to have the doctor they normally would have if the plan were not in existence. Participation in the plan of all or nearly all of the hospitals in a community permits virtually free choice of hospitals. If a hospital which meets good medical standards does not choose to cooperate in the hospital plan, that decision of course should not discredit the service plan.

The sixth test—supervision by the State Insurance Department—is optional. States have not ruled uniformly as to whether the hospital plan is insurance. Since there is no direct cash payment to the subscriber, the plan is considered a service contract, not subject to insurance laws by some states. In other states the hospital service plan is ruled to be insurance.

New York is one of the states in the latter group. Rates to be charged the subscriber are at all times subject to the approval of the Superintendent of Insurance. He is given the power to examine into the affairs of the corporation at any time, and has free access to its books. A detailed annual report is filed with the Department of Insurance on March 1. Our experience convinces us that Insurance Department supervision is a helpful, confidence-creating safeguard.

Not only does the New York plan offer service in more than 175 hospitals, but in the event of injury or emergency illness, special benefits are provided at any hospital in the United States or Canada.

Cooperation by employers includes:

First, a meeting of representatives of each department. These representatives may be either department heads or an employee spokesman. The purpose of this meeting, or meetings, is to explain the hospital plan carefully so that there will be one person in each department who can answer promptly all employee questions that may arise. This meeting has been found to prevent any disruption of routine through employees from all departments flocking to the company representative or personnel director with their queries.

The second step is the distribution to every employee—perhaps with his pay envelope—of a leaflet and a memorandum explaining the three-cents-a-day plan. The memo is to be returned through department representatives with every employee indicating whether he wants to join the three-cents-a-day plan and how many dependents he wishes to enroll at the same time.

This memo satisfies the employer that everyone has had the opportunity to enroll, and also prevents any employee from saying that he did not have

the chance to join, or that he did not know that there would be a 60- to 90-day waiting period if he wished to join later. This procedure insures the enrollment of those who are interested within two weeks and does not allow the procedure to drag.

The third recommended step in the cooperation is payroll deduction. This has many advantages to the employee, particularly from the lower income group. He rarely has a checking account. Payroll deduction makes it unnecessary for him to buy a money order and bother with mailing his payments to headquarters. It also enables him to get protection for 90 cents a month instead of paying the higher quarterly payments. Experience shows that where a payroll deduction is permitted, a larger number of employees will enroll.

When a company grants payroll deduction, the New York plan reciprocates by shortening the waiting period for additional applicants to 30 or 60 days instead of 60 or 90 days. New employees may enroll without a waiting period.

In response to public demand, actuarial studies are under way preparatory to the development of a family membership in New York this year. It is anticipated that when the family plan is available, those who are subscribers now in payroll groups and who otherwise comply with family plan enrollment regulations will be offered a transfer into the new service, with an adjustment of their subscription.

The fourth step in cooperation is designation of an employee to provide liaison with the hospital plan. Department representatives will turn over application cards to him and he will send them to the hospital service organization.